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June 16, 2010

John Chesnutt
US Environmental Protection Agency, Region IX
75 Hawthorne Street, Mail Code SFD-8-3
San Francisco, CA 94105

Re: Draft Remedial Investigation Addendum, Pearl Harbor Sediment, Pearl Harbor, Hawaii, March 2010 prepared by the Department of the Navy, Naval Facilities Engineering Command, Pacific

Dear John:

At Kaanapali Land's request, ENVIRON has reviewed the Sediment Remedial Investigation Addendum and prepared the attached comments for your consideration. I believe John Hahn had indicated to Larry Bradfish that such comments on the addendum would be forthcoming.

If you have any question or would like to discuss the matter, please let me know.

Sincerely,

Stephen T. Washburn
Principal

Enclosure

cc: Larry Bradfish, United States Environmental Protection Agency
Judy Huang, United States Environmental Protection Agency
John Hahn, Mayer Brown LLP

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Comments on the Draft Remedial Investigation Addendum, Pearl Harbor Sediment
Pearl Harbor, Hawaii
March 2010

ENVIRON has reviewed the March 2010 Draft *Remedial Investigation Addendum for Pearl Harbor Sediment* completed by the Naval Facilities Engineering Command, Pacific ("the Navy"). The focus of this review was on data and conclusions presented by the Navy with respect to Walker Bay/West Loch. As described in this memorandum, ENVIRON believes that the Navy's assumptions for evaluation of risks in Walker Bay are inconsistent with the assumptions it had previously employed to assess such risks, and its conclusions regarding the need for long-term fish monitoring are not supported by the available data. Moreover, ENVIRON believes that the Navy's conclusions regarding potential sources of constituents in Walker Bay also are not supported by the available data. ENVIRON's comments are provided in detail below.

1 The Navy should consider the Walker Bay fish tissue result for dioxin obtained in 1996, and the reduction in dioxin concentrations measured in sediment between 1996 and 2009, when evaluating potential risks.

According to the Draft Remedial Investigation Addendum, Pearl Harbor Sediment ("Draft RI Addendum") (Department of Navy [DON] 2010), the Navy excluded the Walker Bay fish tissue result obtained during the 1996 sampling event of the Remedial Investigation (RI) (location 3k) because the reported species (tilapia) is not comparable to the goatfish species represented by the three samples collected at BF3-5 during the RI (see Draft RI Addendum at 5-5 and 5-32). The documentation shows, however, that the 1996 fish tissue sample collected from 3k was indeed a goatfish (see e.g., Human Health Risk Assessment [HHRA] Appendix A, Table 8c [DON 2007]). Therefore, the 1996 and 2009 fish tissue samples are directly comparable. Thus, the Navy should consider the 1996 result in its evaluation of human health risks related to the Site. If this additional fish tissue result of 0.00145 micrograms per kilogram (µg/kg)[1] of polychlorinated dibenzo-p-dioxins/polychlorinated dibenzo-p-furans (PCDD/PCDF or "dioxin") reported as dioxin toxic equivalent (TEQ)[2] were to be included with the fish tissue samples analyzed in 2009, the average dioxin concentration in the four samples would be 0.00624 µg/kg, which is below the fish consumption criterion of 0.0068 µg/kg, and as a result, would not result in the need for evaluation of long-term fish monitoring in Walker Bay in the Feasibility Study (FS). Moreover, the Draft RI Addendum did not address the relevance of the substantial decrease in dioxin concentrations that was observed in sediment samples collected from Walker Bay between the 1996 and 2009 sampling events. It bears emphasizing that in recalculating the average dioxin TEQ concentration of the four fish tissue samples collected from 3k and BF3-5, it

[1] See DON 2007, Appendix A at Table 8c. It is not clear why the 3k fish tissue sample result is reported on Figure 5-7 of the Draft RI Addendum as 0.001991 µg/kg.

[2] To account for the differences in toxicity across dioxin congeners, the congener concentration is modified by applying a toxic equivalency factor (TEF) that relates the dioxin/furan congener's toxicity to that of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). The resultant concentration is reported as the toxic equivalent (TEQ) amount of total dioxins/furans ("2,3.7,8-TCDD TEQ" or "dioxin TEQ").

was also necessary to recalculate the dioxin TEQ for the three fish tissue samples collected at BF3-5 by using the appropriate Van den Berg (2006) Toxic Equivalency Factors (TEF),[3] which appear to have been used incorrectly in the Draft RI Addendum's calculation of dioxin TEQ concentrations.[4]

2 The focused and skewed sampling design does not support the Navy's conclusion that exceedances reported for Walker Bay sediment and fish tissue samples are attributable to the former mixing site.

The Navy did not evaluate the potential study design artifacts that may be skewing concentrations of dioxin in fish tissue nor did they evaluate potentially confounding variables such as fish size, age, and fish lipid content. The observed differences in dioxin concentrations in fish that occur between areas could be due to these variables rather than differences in dioxin sources. In addition, as previously noted, dioxin concentrations in sediment samples collected from Walker Bay decreased substantially between the 1996 and 2009 sampling events, which further calls into question the representativeness of the recent fish tissue sampling.

The Navy study design, data analysis, and conclusions appear to be biased in such a way as to implicate Walker Bay as an area impacted with chemicals and/or a potential source of chemicals to Pearl Harbor. For example, Figure 1-6 depicts a density of core and surface sediment sampling points in Walker Bay adjacent to the former pesticide mixing site that is much higher than the sampling densities for the majority of the investigation. This suggests a focused sampling design rather than a general investigation. In Section 5.1.6.3, the Navy asserts that "the exceedances for Walker Bay sediments samples (arsenic and total DDT) and fish tissue samples (PCDDs/PCDFs as 2,3,7,8 TCDD TEQ) are most likely attributable to pesticides and related chemicals released at the pesticide mixing area (i.e., the Oahu Sugar site)". The nature of the Navy investigation is insufficient to differentiate among the upland sources, sources associated with historical uses, or the former mixing site as the sources of dioxin to Walker Bay. There is currently no conclusive physical or chemical evidence that would allow such a conclusion to be drawn.

[3] TEF = 0 01 for 1,2,3,4,6,7,8 –Heptachlorodibenzo-p-dioxin and 0.0003 for octochlorodibenzo-p-dioxin

[4] The recalculated dioxin TEQs for BF3-5a, b, and c are 0.0100584 µg/kg, 0.0054738 µg/kg, and 0.0079833 µg/kg, respectively, which yields an average of 0.00624 µg/kg, when the sample result from location 3k (0 00145 µg/kg) is included. In contast, the three values of dioxin TEQ reported in the Draft RI Addendum for BF3-5 are 0.01132 J, 0.006160 J, and 0.008970 J, respectively (see Draft RI Addendum at Table B.2.2-2). The average of the later three values with that of the 3k fish tissue sample analyzed in 1996 (0.00145 µg/kg) is 0.006975 µg/kg, which is only slightly above the 0.0068 µg/kg fish consumption screening level derived by the Draft RI Addendum.